

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/13/2009 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 14-27 and 73-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frampton (US3969274, of record) in view of Luo et al. (2002/0065378, of record).

In regards to claims 14-15 and 21-27, Frampton teaches a catalyst comprising an active catalytic material and a preformed support, wherein the active catalytic material is a metal, salt, oxide, acid, alloy, or heteropolyacid of an element of Groups IB, IIB, IVB, V, VIB, VIIB and VIII of the Periodic Table of Elements and where the support is a

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steam treated silica xerogel (see Frampton Claim 1). The reference specifically teachings the use of the following as active catalytic materials: Cu, Ag, Au, Zn, Cd, Hg, Ti, Bi, Sb, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Re, N, P, As, Fe, Co, Ni, Ru, Os, Ir, Rh, Pd, and Pt (see Frampton column 4, lines 40-52). Frampton further teaches the spherical xerogel support to have a composition of SiO_2 over 99 wt%, Fe_2O_3 0.01-0.03 wt%, Na_2O 0.02-0.09 wt%, and Al_2O_3 less than 0.4 wt% (see Frampton claim 2 and column 6 lines 15-18). Thus, Frampton teaches a catalyst comprising 0.02-0.09 wt% (equivalent to mass%) of an alkali metal.

It would have been obvious to one of ordinary skill in the art to select from the portion of the overlapping compositional ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05). It would have been further obvious to one of ordinary skill in the art to select cobalt (Group VIII metal) as a catalytic material from the disclosed teachings.

Frampton does not disclose a support with a particle diameter in the range of *approximately* 20-250 microns. However, Luo discloses having a catalyst support with silica particles with a size of 10-100 microns (paragraph 0007). It would have been obvious to one of ordinary skill in the art to select from the portion of the overlapping compositional ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05). It would have been further obvious to one of ordinary skill in the art to select a silica particle size that would be suitable for the catalyst.

In regards to the limitation “wherein the catalyst facilitates a production of hydrocarbon from a syngas in a slurry bed”, this is considered a statement of functional language. As per MPEP 2114 relating to Apparatus and Article claims – Functional Language: While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). As the references and the claimed *APARATUS* are patentably indistinguishable, the apparatus of the prior art is reasonable expected to be able to perform the claimed functionality (i.e. *LIMITATION*). With that being said, the prior art in this case, teaches a catalyst useful for the production of hydrocarbons (see col 4, ln 53-68) and therefore meets the instant claims.

In regards to claims 16-17, Frampton teaches the xerogel support to have a pore volume of 0.4-2.2 mL/g, surface area 20-800 m²/g (see Frampton claim 2) and a specific example of a silica xerogel support having an average pore diameter of 12 nm, pore volume of 1.04 mL/g, and surface area of 350 m²/g (see Frampton example 1). It would have been obvious to one of ordinary skill in the art to select from the portion of the overlapping ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05).

In regards to claims 18-20, as Frampton teaches a catalyst with substantially the same composition and structure (see above), it would necessarily follow that it possess the same properties as instantly claimed.

In regards to claims 73-74, as Frampton teaches a catalyst with substantially the same composition and structure (see above), it would necessarily follow that it possess the same properties as instantly claimed.

4. Claims 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frampton (US3969274, of record) and Luo et al. (2002/0065378) in view of Fiato et al. (US4544674).

In regards to claims 42-43, teaches adding a group VIII metal in the form of a precursor comprising an alkali metal (col 5, ln 10-60), but does not specifically teach cobalt added in a the form of a cobalt precursor containing at most 5% alkali or alkaline-earth metal.

Fiato teaches the formation of a catalyst comprising a precursor solution of cobalt, iron (Group VIII metals) and 1% potassium (alkali metal) (see col 7, ln 53-60).

It would have been obvious to one of ordinary skill in the art to modify the teachings of Frampton to select a precursor solution comprising cobalt and 1% potassium as taught by Fiato, in order to enhance the catalytic activity of the material, and increase the industrial applicability of the invention.

5. Claims 14-15, 18-19, 21-22, 25-26 and 73-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheffer et al. (US5073661) in view of Luo et al. (2002/0065378).

In regards to claims 14-15, 21-22 and 25-26 ,Scheffer teaches a catalyst for the preparation of hydrocarbons, comprising a porous spherical carrier material selected from silica, alumina and mixtures thereof, cobalt, and a promoter such as magnesium (see col 2, ln 28-38 and see col 5, ln 19-21). Scheffer teaches the addition of 3-300 parts by weight of cobalt and 0.01-100 parts per weight promoter per 100 parts by weight carrier material (see col 2, ln 49-63). Thus, the reference teaches a catalyst comprising compositional ranges which overlap with the instant claims. It would have been obvious to one of ordinary skill in the art to select from the portion of the overlapping compositional ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05).

Scheffer does not disclose that the support has a diameter in the range of *approximately* 20-250 microns. However, Luo discloses having a support with silica particles with a size of 10-100 microns (paragraph 0007). It would have been obvious to one of ordinary skill in the art to select from the portion of the overlapping compositional ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05). It would have been further obvious to one of ordinary skill in the art to select a silica particle size that would be suitable for the catalyst.

In regards to the limitation “wherein the catalyst facilitates a production of hydrocarbon from a syngas in a slurry bed”, this is considered a statement of functional language. As per MPEP 2114 relating to Apparatus and Article claims – Functional Language: While features of an apparatus may be recited either structurally or

functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). As the references and the claimed *APARATUS* are patentably indistinguishable, the apparatus of the prior art is reasonable expected to be able to perform the claimed functionality (i.e. *LIMITATION*). With that being said, the prior art in this case, teaches a catalyst useful for the production of hydrocarbons and therefore meets the instant claims.

In regards to claims 18-19, as Scheffer teaches a catalyst with substantially the same composition and structure (see above), it would necessarily follow that it possess the same properties as instantly claimed.

In regards to claims 73-74, as Scheffer teaches a catalyst with substantially the same composition and structure (see above), it would necessarily follow that it possess the same properties as instantly claimed.

6. Claims 16-17, 20, 23-24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheffer and Luo et al. (2002/0065378) as applied to claims 14 and 15 above, and further in view of Frampton (US3969274, of record).

In regards to claims 16-17, Scheffer teaches a catalyst with a support comprising spherical silica, alumina, or mixtures thereof but does not teach the average surface or porosity of the support.

Frampton teaches a catalyst comprising a Group VIII and silica support made up of elementary spherical particles, having a pore volume of 0.4-2.2 mL/g, surface area

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20-800 m²/g (see Frampton claim 2) and a specific example of a silica xerogel support having an average pore diameter of 12 nm, pore volume of 1.04 mL/g, and surface area of 350 m²/g (see Frampton example 1).

It would have been obvious to one of ordinary skill in the art to substitute the support as taught by Scheffer with that taught by Frampton in order to enhance the porosity and catalytic activity of the invention, thus increasing the industrial applicability of the invention. It would have further been obvious to one of ordinary skill in the art to select from the portion of the overlapping ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05)

In regards to claim 20, as the references teach a catalyst with substantially the same composition and structure, it would necessary follow that it possess the same properties as instantly claimed.

Regarding claims 23-24 and 27, Scheffer discloses a spherical silica support (col 5, ln 19-21).

Response to Arguments

7. Applicant's arguments filed 9/22/2009 have been fully considered but they are not persuasive.

8. The Applicant argues that the prior art of record fails to teach the limitation "wherein the catalyst facilitates a production of hydrocarbon from a syngas in a slurry bed".

The Examiner disagrees. Functional limitations do not further limit the structure of the catalyst and therefore do not carry patentable weight. As stated in the rejection above, As per MPEP 2114 relating to Apparatus and Article claims – Functional Language: While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). As the references and the claimed *APARATUS* are patentably indistinguishable, the apparatus of the prior art is reasonable expected to be able to perform the claimed functionality (i.e. *LIMITATION*).

9. The Applicant argues that Frampton fails to disclose a spherical catalyst support.

The Examiner disagrees. Frampton discloses that the silica xerogel support with a diameter range of 0.5 to 25 mm (column 6, lines 15-18). This would indicate that the catalyst support is spherical.

10. The Applicant argues that Scheffer does not disclose a spherical catalyst support.

The Examiner disagrees. Scheffer discloses a spherical silica carrier/support (column 5 lines 19-20).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIN B. SAAD whose telephone number is (571)270-

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3634. The examiner can normally be reached on Monday through Thursday from 8am-5pm Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. B. S./
Examiner, Art Unit 1793
10/9/2009

/Jessica L. Ward/
Supervisory Patent Examiner, Art Unit 1793